



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,584	10/06/2003	Thomas W. Kenny	COOL-01301	5276
28960	7590	06/03/2004	EXAMINER	
HAVERSTOCK & OWENS LLP 162 NORTH WOLFE ROAD SUNNYVALE, CA 94086			MCKINNON, TERRELL L	
			ART UNIT	PAPER NUMBER
			3743	

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/680,584	Applicant(s) KENNY ET AL.	
	Examiner Terrell L Mckinnon	Art Unit 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-105 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-40, 42-53, 55-59, 61-64, 66-77, 95-98, 102, 103 and 105 is/are rejected.
- 7) ☒ Claim(s) 10, 41, 54, 60, 65, 78-94, 99-101 and 103 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 11-22, 24-32, 33-40, 42-50, 52, 53, 55, 56, 59, 61-64, 66-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Gruber et al. (U.S. 5,388,635).

Gruber discloses a heat exchanger and method of cooling a heat source comprising all of the applicant's claimed and disclosed limitation of the instant invention.

3. Claims 104 and 105 are rejected under 35 U.S.C. 102(b) as being anticipated by Fahey et al. (U.S. 5,239,443).

Fahey discloses a heat exchanger and method of cooling a heat source comprising all of the applicant's claimed and disclosed limitation of the instant invention

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Art Unit: 3743

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 69-76 are rejected under 35 U.S.C. 102(e) as being anticipated by Agonafer et al. (U.S. 6,431,260).

Agonafer discloses a heat exchanger and method of cooling a heat source comprising all of the applicant's claimed and disclosed limitation of the instant invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 23 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruber et al. (U.S. 5,388,635) in view of Cannel et al. (U.S. 6,729,383).

Gruber's invention discloses all of the claimed limitations from above except for at least one of the plurality of pillars include at least varying dimensions along a predetermined direction.

8. However, Cannel teaches the use of a plurality of pillars (38) comprising at varying dimensions along a predetermined direction (Figs. 12, 14, 16, 20, 25 and 30).

Art Unit: 3743

Given the teachings of Cannel, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat exchanger of Gruber with a plurality of pillars including at least varying dimensions along a predetermined direction.

Doing so would provide enhance the heat transfer capability of the cooling device.

9. Claims 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gruber et al. (U.S. 5,388,635) in view of Cannel et al. (U.S. 6,729,383) as applied to claims above, and further in view of Souriau (U.S. 3,948,316).

Gruber's invention, as modified by Cannel, discloses all of the claimed limitations from above except for an average pore size in the microstructure within the range of 30 and 300 microns and porosity in the range of 0.3 and 0.8.

10. However, Souriau teaches a porous structure (20) having an average pore size within the range of 30 and 300 microns (column 4, lines 15-20).

Given the teachings of Souriau, it would have been obvious to one of ordinary skill in the art at the time of the invention to furthermore modify the heat exchanger of Gruber with an average pore size in the microstructure within the range of 30 and 300 microns and a porosity in the range of 0.3 and 0.8.

Doing so would provide a micro-porous structure having an efficient pore size and porosity for improved heat transfer.

11. Claim 77, 92, 95, 96-98, 102 and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agonafer et al. (U.S. 6,431,260) in view of Gruber (U.S. 5,388,635).

Art Unit: 3743

Agonafer's invention discloses all of the claimed limitations from above except for applying a thermally conductive coating to the interface layer; the interface layer being formed by laser assisted etching, drilling, injection molding, machining, cross cutting or sawing process.

12. However, Gruber teaches the use of a coating applied to the interface layer (column 13, lines 1-6); and the use of forming the interface layer being formed by laser assisted etching or machining process.

Given the teachings of Gruber, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat exchanger of Agonafer with the interface layer being formed by laser assisted etching, drilling, injection molding, machining, cross cutting or sawing process.

Doing so would provide a safe and reliable means of manufacturing a heat exchanger for a given cooling efficiency.

Allowable Subject Matter

13. Claims 10, 41, 54, 60, 65 78-94, 99-101 and 103 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to


Art Unit: 3743

applicant's disclosure. The following references are cited for disclosing related limitations of the applicant's claimed and disclosed invention. Chu et al (4 patents), Philpott et al, Frey et al, Von Cube et al, Zingher, Becker et al and Batchelder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L Mckinnon whose telephone number is 703-305-0059. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Terrell L Mckinnon
Primary Examiner
Art Unit 3743
June 1, 2004